

WHAT IS CLAIMED IS:

1. A method for rounding a first two's complement fixed point datum, X , having an integer part of n bits, a fractional part of a bits the integer part, and sign bit, s_i , to a second two's complement fixed point datum, \hat{X} , having a fractional part of b bits following the radix point, where a and b are representative of the respective precisions of X and \hat{X} , and where $a > b$, comprising:

10 a. evaluating the fractional part of X and defining y as the most significant bit (MSB) of the a bits;

b. if the first bit following the radix point of X is equal to a "1" bit trailed by $(a-1)$ "0" bits, then defining \hat{X} substantially according to the equation:

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$$\hat{X} = n + s_i$$

and

otherwise, defining \hat{X} substantially according to the equation:

$$\hat{X} = n + y$$

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2. The method of claim 1, wherein the occurrence of positive numbers and negative numbers in a plurality of the datum, X , is substantially equiprobable.

25 3. A computer program product recorded on a computer readable medium for rounding a first two's complement fixed point datum, X , having an integer part of n bits, a fractional part of a bits the integer part, and sign bit, s_i , to a second two's complement fixed point datum, \hat{X} , having a fractional part of b bits following the radix point, where a and b are representative of the respective precisions of X and \hat{X} , and where $a > b$, comprising:

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a. computer readable program code which evaluates the fractional part of X and defining y as the most significant bit (MSB) of the a bits;

5 b. computer readable program code which, if the first bit following the radix point of X is equal to a "1" bit trailed by (a-1) "0" bits, then defines \hat{X} substantially according to the equation:

$$\hat{X} = n + s_i$$

and

10 computer readable program code which otherwise defines \hat{X} substantially according to the equation:

$$\hat{X} = n + y$$

4. The computer program product of Claim 3, wherein the
15 occurrence of positive numbers and negative numbers in a plurality of the datum, X, is substantially equiprobable.